



⑫

EUROPEAN PATENT APPLICATION

⑬ Application number : 94306906.2

⑮ Int. Cl.⁶ : F16L 11/08

⑭ Date of filing : 21.09.94

⑯ Priority : 22.09.93 GB 9319545

⑰ Date of publication of application :
22.03.95 Bulletin 95/12

⑲ Designated Contracting States :
BE DE DK FR NL SE

⑳ Applicant : STRUCTURAL POLYMER
SYSTEMS Ltd.
Love Lane
Cowes, Isle of Wight PO31 7EU (GB)

⑳ Inventor : Whiley, David Anthony
56 Montague Place
Shrewsbury, Shropshire, SY3 7NF (GB)
Inventor : Ness, Derek
Warder's Cottage,
Thorncross
Nr Brightstone, Isle of Wight, PO30 5PN (GB)

⑳ Representative : Lomas, Geoffrey Michael et al
Barker, Brettell & Boutland
Prudential Buildings, room 24
97-101 Above Bar Street
Southampton SO14 7JW (GB)

⑳ Filamentary members.

⑳ With reference to Figure 1, a filamentary member in the form of flexible tubing 1 is provided with longitudinal stiffening comprising a helical reinforcement rib 2 wound over the external surface 3 of the tubing 1 and anchored to the surface 3 at longitudinally spaced intervals, each of which extends between anchor points A, E, are at the extremities of one complete turn of a helical winding. The rib 2 is free to move, relative to the external surface 3, except at anchor points A, E.

Winding of the rib 2 takes places around the central axis 4 of the tubing 1.

Should bending of the tubing 1 take place, around a winding drum, (not shown), as indicated by arrow 5, the net increase in the rib path length ABC on the tube surface 3 on the outside of the bend is equal to the reduction in the rib path length CDE on the inside of the bend. Consequently, the rib path length ABCDE is the same in both the bent and unbent conditions of the tubing 1.

With reference to Figure 2, in the bent condition, mid-point C of the rib winding is displaced relative to mid-point C₁ on the surface 3 of the tubing 1, by distance 6. Similarly, but by small amounts 7 and 8, points B and D on the rib winding are displaced relative to points B₁ and D₁ on the surface 3.

In the situation illustrated by Figure 2, the external surface 3 of the tubing 1 is strained due to bending. However, longitudinal strain in the stiffening rib 2 is substantially zero everywhere, regardless of the radius of the bend or tubing diameter.

In order to substantially prevent the tubing 1 from twisting under longitudinal loads, a second helically wound reinforcement rib may be provided, wound in the opposite direction to rib 2.

